

ABSTRACT OF THE DISCLOSURE

A system for highly sensitive electrochemical detection of trace nitro- aromatic compounds in air, uses a carbon or carbon/gold working electrode with a surface that is modified to increase the electron transfer kinetics of nitro-aromatic compounds. Chemical modifiers of the working electrode surface include amino-aromatic compounds such as aniline and its derivatives. The detection method involves dissolving trace nitro-aromatic compounds in an electrolyte including aprotic solvents, or dipolar solvents, in the electrochemical cell including a working electrode, a reference electrode and an auxiliary electrode. Voltage is varied across the working electrode and the reference electrode, and an electrical current is measured between the working electrode and the auxiliary electrode. The measured electrical peak current is a sensitive indication of the concentration of the trace compounds. This invention is appropriate for portable, field-testing of trace explosive compounds in air.